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PATENT  
Attorney Docket No.: 010327-003200US

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

On December 2, 2005

TOWNSEND and TOWNSEND and CREW LLP

By: Julie Taylor Clough

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Hui-Lin LI

Application No.: 10/045,182

Filed: October 18, 2001

For: METHOD FOR SYNCHRONIZING  
CIRCUIT RELATED OBJECTS  
BETWEEN NETWORK  
MANAGEMENT SYSTEMS AND  
NETWORK CONTROL PROCESSORS

Customer No.: 20350

Confirmation No. 4837

Examiner: Michael Won

Technology Center/Art Unit: 2155

**DECLARATION UNDER  
37 CFR § 1.131**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

We, the undersigned inventors, declare as follows:

1. We are the only inventors of the invention claimed in the above-captioned patent application.

2. We understand that in an Office Action, certain of the claims have been rejected as allegedly being obvious over Kidder et al., U.S. Patent No. 6,880,086 B2, filed on February 5, 2001, which is a continuation-in-part of Application No. 09/718,224, filed on November 21, 2001, which is a continuation-in-part of Application

No. 09/756,936, filed on January 9, 2001, which is a continuation-in-part of Application No. 09/711,054, filed on November 9, 2000, which is a continuation-in-part of Application No. 09/703,856, filed on November 1, 2000, which is a continuation in-part of Application No. 09/687,191, filed on October 12, 2000 (now abandoned), which is a continuation-in-part of Application No. 09/669,364, filed on September 26, 2000, which is a continuation-in-part of Application No. 09/663,947, filed on September 18, 2000(now abandoned), which is a continuation-in part of Application No. 09/656,123, filed on September 6, 2000 (now abandoned), which is a continuation-in-part of Application No. 09/653,700, filed on August 31, 2000 (now abandoned), which is a continuation-in-part of Application No. 09/637,800, filed on August 11,2000, which is a continuation in-part of Application No. 09/633,675, filed on August 7,2000, which is a continuation-in-part of Application No. 09/625, 101, filed on July 24, 2000, which is a continuation-in-part of Application No. 09/616,477, filed on July 14, 2000, which is a continuation-in-part of Application No. 09/613,940, filed on July 11, 2000, which is a continuation-in-part of Application No. 09/596,055, filed on June 16, 2000, which is a continuation-in-part of Application No. 09/593,034, filed on June 13, 2000 (now abandoned), which is a continuation-in part of Application No. 09/574,440, filed on May 20, 2000 (now Patent No. 6,654,903), and a continuation-in-part of Application No. 09/591,193, filed on June 9, 2000 (now Patent No. 6,332,198), which is a continuation-in-part of Application No. 09/588,398, filed on June 6, 2000 ( now abandoned), which is a continuation-in-part of Application No. 09/574,341, filed on May 20, 2000, and a continuation-in-part of application No. 09/574,343, filed on May 20, 2000 (now Patent No. 6,639,910). Also, certain claims have been rejected as allegedly being obvious over Kidder et al. and Christian et al., U.S. Patent No. 6,854,010 B1, filed on June 25, 2001, which claims priority to U.S. Provisional Application No. 60/281,837, filed on April 5, 2001.

3. We conceived of the invention disclosed and claimed in the relevant claims of the instant application prior to May 20, 2000, and were diligent in reducing to practice the same before such date.

processor, copying data back to the network management server (NMS), and the parsing and storing of data in the NMS database are described.

5. The invention was also tested and worked for its intended purpose before May 20, 2000. Support for this is also provided on page 2, question 5 of the Invention Disclosure, which states the test of the invention indicates the invention is working.

6. The dates on the pages of the enclosed Exhibit A have been redacted. All such redacted dates are prior to May 20, 2000.

7. In view of the foregoing, we respectfully submit that the evidence provided in Exhibit A unequivocally establishes that the claimed invention was conceived of and reduced to practice prior to May 20, 2000.

8. We further declare that all statements made herein of our knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: 11-16-05

  
Hui-Lin Li

Date: \_\_\_\_\_

\_\_\_\_\_  
Bahar E. Baran

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5. The invention was also tested and worked for its intended purpose before May 20, 2000. Support for this is also provided on page 2, question 5 of the Invention Disclosure, which states the test of the invention indicates the invention is working.

6. The dates on the pages of the enclosed Exhibit A have been redacted. All such redacted dates are prior to May 20, 2000.

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Date: \_\_\_\_\_

\_\_\_\_\_  
Hui-Lin Li

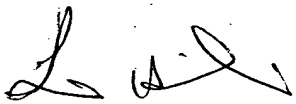

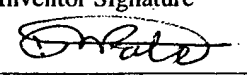

Date: 11/16/2005

\_\_\_\_\_  
  
Bahar E. Baran

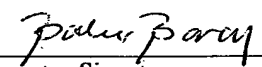

# Exhibit A

## A GENERAL NOTE REGARDING PATENT APPLICATIONS

1. The law requires that the description of the invention must be detailed enough to enable anyone having ordinary skill in this field to make and build the invention without guesswork or undue experimentation. Please provide a lot of detail
2. All inventive features must be both described in the application and shown in the drawings.
3. The application must disclose the best way to carry out the invention, as subjectively believed by the inventor/s at the time the application is filed. This is called the "best mode" requirement. Because of this requirement, we should not omit any valuable details from a patent application.
4. The Patent Office has a strict protocol for the wording of each claim, i.e. the numbered paragraphs toward the end of the patent application after "What is claimed is:". Each claim must be in the form of an unbroken sentence. Each element of the invention must first be set forth in the sentence before its relation to the previously set forth elements is discussed. For example, assuming the invention includes receiving analog data, filtering it, digitizing it, and storing it in a RAM, the pertinent part of the claim might read:  
  
An electronic circuit for storing data, comprising:  
    an input terminal for receiving analog data;  
    a filter connected to the input terminal for filtering the received analog data and outputting filtered analog data;  
    an analog to digital (A/D) conversion circuit connected to the filter for converting the filtered analog data to digital data;  
    a memory controller supplied with the digital data from the A/D conversion circuit; and  
    a random access memory (RAM) for storing the digital data under the control of the memory controller.
5. Every claimed element must find a literal correspondence with an allegedly infringing device for infringement to occur. Thus, to maximize claim coverage, the recited elements should be few in number and as generally descriptive as possible. However, a claim is invalid if it would be infringed by the "prior art," which includes all previously issued patents as well as offers for sale and publications and public use of other devices or the like known to the public more than one year prior to the filing of the patent application.
6. The claims should define the invention in general terms so that infringement is not easily avoided by the omission of some nonessential element. However, the claim terms must also clearly distinguish between this invention and the "prior art."
7. A self-contained claim is referred to as an independent claim. A dependent claim, on the other hand, refers to some other claim. Dependent claims are construed as including all of the language of the claim to which they refer.
8. The Abstract does not limit the scope of protection of the patent. It is only intended as a searching aid.

  
\_\_\_\_\_  
Inventor Signature      Date   
  
\_\_\_\_\_  
Witness      Date 

- 1 -

  
\_\_\_\_\_  
Inventor Signature      Date   
\_\_\_\_\_  
Inventor Signature      Date

### 3. CONCEPTION OF INVENTION

a. First Oral Disclosure

Date [REDACTED] To Whom Francois Bedard

b. First Drawing(s)

Date                     

Where is first drawing located now? /work/hms\_doc/projects/p4600m/  
ds/cktResync

#### 4. CONSTRUCTION OF INVENTION

a. Date Completed [REDACTED]

b. Made By Whom? Hui-Lin Li

### c. Experimental Model Prototype

## 5. TEST OF INVENTION

a. Date [REDACTED]

b. Witnesses Bahar Baran

c. Results It's working.

## 6. PUBLICATION

a. Was a description of invention published? Yes \_\_, No X.

b. Date \_\_\_\_\_

c. Title \_\_\_\_\_

d. Please attach a copy of the publication or list below where a copy can be obtained.

*[Handwritten signature]*

Inventor Signature

Date \_\_\_\_\_



-3-

Baker Perry  
Inventor Signature

Inventor Signature

Date \_\_\_\_\_

[REDACTED]

**Witness**

Date \_\_\_\_\_

**Inventor Signature**

Date \_\_\_\_\_

\_\_\_\_\_  
e. Is a technical article or advertising contemplated?

Yes \_\_\_\_\_, No X.

When? \_\_\_\_\_

What publication? \_\_\_\_\_

7. SALE

a. Was invention offered for sale? Yes \_\_\_\_\_, No X.

a. Was invention sold? Yes \_\_\_\_\_, No \_\_\_\_\_.

b. Date of first sale or offer for sale ? August 10, 1964

PUBLICATIONS, PATENTS, AND PATENT APPLICATIONS DISCLOSING RELATED SUBJECT MATTER (please continue on separate sheet if necessary):

9. CLOSEST KNOWN PRIOR DEVICES

10. GOVERNMENT FUNDING: Did any of the following occur during and in association with performance of a U.S. government funded contract?

a. conceived Yes \_\_\_\_\_, No X,

[Signature]  
Inventor Signature

[Redacted]  
Date

- 4 -

[Signature]  
Inventor Signature

[Redacted]  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

\_\_\_\_\_  
Inventor Signature

\_\_\_\_\_  
Date

b. constructed Yes \_\_\_\_\_, No X,

c. tested Yes \_\_\_\_\_, No X.

11. DISCLOSURE OF INVENTION

Please attach a concise description of the invention. Please attach pertinent specific data or drawings including statements of advantages and special features. Use back of sheet or additional sheets if necessary. Attach photos or drawing prints if possible:

[Signature]

[Redacted]

Inventor

Date

Inventor

Date

Inventor

Date

Inventor

Date

Witnessed, read, and understood by:

[sign name] Date

[sign name] Date

(All signatories should initial and date each page

[Signature]

Inventor Signature

Date

[Redacted]

-5-

[Signature]

Inventor Signature

Date

[Redacted]

Witness

Date

Inventor Signature

Date



## Patent Abstract

# Synchronizing circuit related objects between Network Management Systems and Network Control Processor

(Lynn Li, [REDACTED])

This document describes the design for synchronizing the list of circuit-related objects between the Network Management Systems (NMS) and Network Control Processor (NCP). This approach is based on accessing NCP persistent tables remotely via NMS server.

## Introduction

NMS is required to manage a maximum network size of 10 switches. Each switch may have up to 16K circuits. 12K Virtual Channel Connection (VCC) and 4K Virtual Path Connection (VPC). These circuits may be part of Permanent Virtual Circuits (PVCs), Soft PVCs or Switched Virtual Circuits (SVCs). The limits for Soft PVCs are significantly lower than 16K, but that is not relevant to this problem. Each circuit is represented by multiple records (rows in an SNMP table):

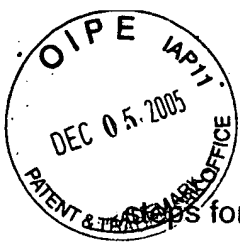
- One Cross-Connect record
- Two virtual link records (Virtual Channel Link or Virtual Path Link)
- Between one and four Traffic Descriptor records

Assuming a typical average usage of two Traffic Descriptors for each circuit (transmit and receive), and assuming the bulk of the circuits are PVCs, the number of circuit records on a ATM switch can be 80K. That's 16K cross-connects plus 32K Virtual Links (VLs) plus 32K Traffic Descriptors. Therefore, an almost worst case 10 switch network has approximately 800K circuit records.

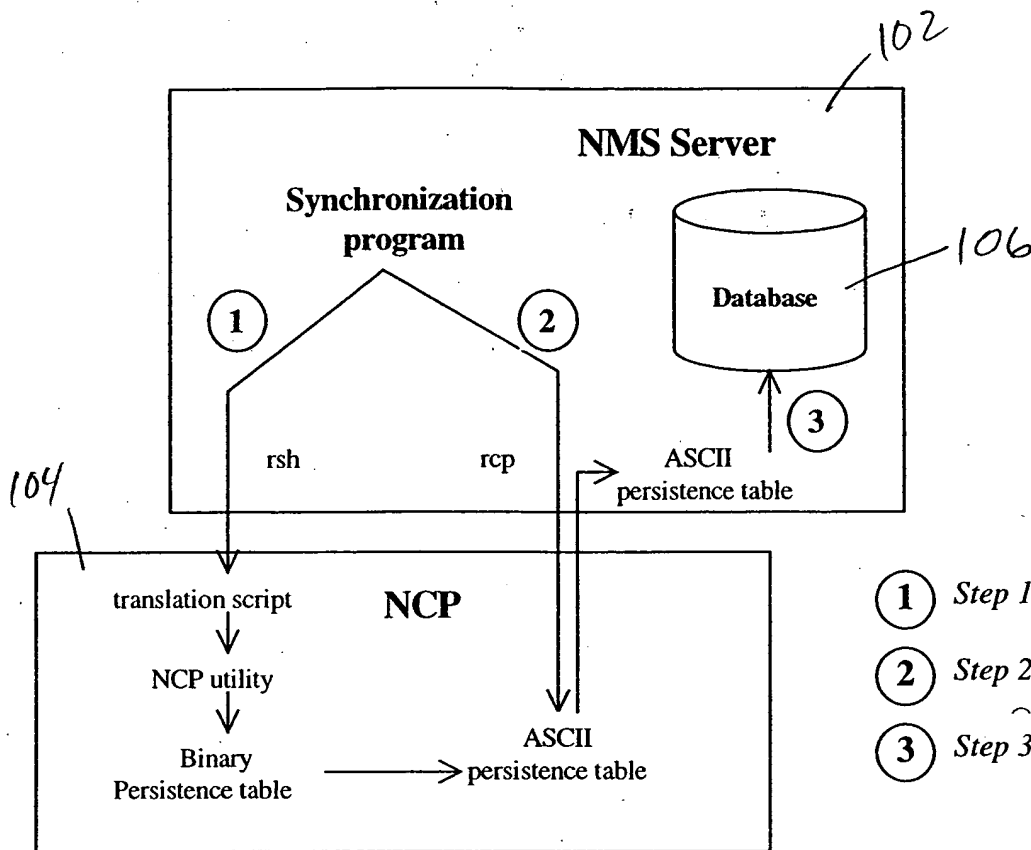
Typically, NMS uploads or synchronizes data by making a get request to SNMP. Once SNMP receives the request from NMS, it fetches data from switch, and pass them over to NMS. However, this approach doesn't satisfy uploading a massive number of circuits because of performance issue. Based on sample data, it would take about 4 hours to upload 32k circuits.

## Solutions

In order to improve the performance issue for uploading/synchronizing circuits, we decide to get data via NCP persistence tables directly instead of using SNMP. The diagram of the new design for synchronization is shown in Figure 1. There are three



Steps for this new design. Details will be followed.



**Figure 1: Diagram for circuit synchronization**

Step 1: Data translation in NCP

NMS server initiate a translation script in NCP using "rsh" unix command, which would translate circuit related persistence tables from binary to ASCII format. Persistent tables basically are binary files where data for all different type of objects get stored in the NCP. When users make any changes via LOI or NMS for a certain type of object, its persistence table will get updated as well. Therefore, persistence table is the place that NMS is interested for object synchronization. Moreover, this step can not be done in NMS server because it requires some support from NCP utilities.

Step2: Copy data remotely to NMS

Once the translation is done, NMS will start copying the ASCII table back to NMS server via "rcp" command. "rcp" is unix command which performs remote copy that allows users to copy files from remote workstation. The accessible directory in host machine has to have remote machine's host name and user name in order to copy files successfully. Host machine at this point is the NCP, and remote machine is the NMS workstation.

### Step3: Parse and store data into NMS database

After the remote copy operation has succeeded, the data is parsed and stored in to the NMS database. The format of ASCII persistence table is a plain text file which maintains all available records for one type of object in NCP. At this point, what NMS needs are just the circuit objects. Each record consists of a unique key, and a group of attribute names and corresponding values. The key is identified an individual circuit, and it can be a combination of more than one attributes. However, this format is not compatible with the one from NMS database. Therefore, the parsing module of NMS server reads all records from a persistence table, parses them to NMS desired format, and stores them into memory. Once this is done the set of data would be compared with data from the same object table in NMS database. If there were a mismatch between two tables, NMS database would be updated accordingly.

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